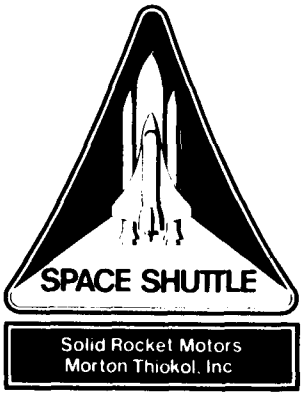

TWR-19062 Rev. A

CR-183707

SRM 360H005 (STS-28R) Performance Information Summary

(NASA-CR-183707) SRM 360H005 (STS-28R) PERFORMANCE INFORMATION SUMMARY (Morton Thiokol) 10 p

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Prepared for:

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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MARSHALL SPACE FLIGHT CENTER, ALABAMA 35812

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	ECS SS-1013

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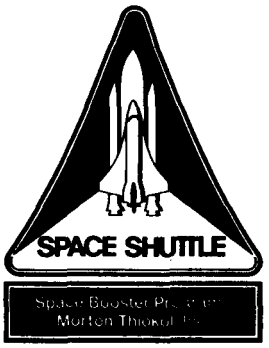

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TITLE

SRM 360H005 (STS-28R) Performance Information Summary

17 May 1989

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REVISION TRANSMITTAL

DOCUMENT NO.	VOLUME	DATE
WHC-SD-WM-TWR-19062		17 May 1989

REVISE THE ABOVE LISTED DOCUMENT IN ACCORDANCE WITH THE FOLLOWING INSTRUCTIONS TO UPDATE THE DOCUMENT TO REVISION A

THIS REVISION TRANSMITTAL MAY BE DISCARDED AFTER COMPLETING REVISION

FORM TC NO. 1845

ACTIVE PAGE RECORD

PAGE NO.	REVISION	PAGE NO.	REVISION	PAGE NO.	REVISION	PAGE NO.	REVISION
2	A						
4	A						

REVISION DESCRIPTION

REV LTR	DATE	DESCRIPTION
A	5/17/89	o Table II, change the right-hand motor forward segment propellant weight from 301,205 to 301,239 lb o Table II, change the right-hand motor total propellant weight from 1,106,416 to 1,106,450 lb
A	5/17/89	o Table IV, change (hr/sec) to (in/hr)

A request was made from MSFC, to document the STS-28R (360H005) propellant characteristics, propellant burn rates and weights. These propellant characteristics will be used by MSFC, JSC and Rockwell for STS-28R preliminary performance evaluations.

STS-28R (360H005) segment propellant 5-inch CP burn rates are shown below:

Table I

STS-28R (360H005) 5" CP Burn Rate Averages
With Scale Factor and Predicted Motor Burn Rates

Segment	360H005A (Left) 5" CP Burn Rate (in/sec)	360H005B (Right) 5" CP Burn Rate (in/sec)
Forward	0.364	0.366
Forward Center	0.364	0.363
Aft Center	0.365	0.361
Aft	0.364	0.364
Average	0.364	0.364
Motor Scale Factor (Population SRM-15 to SRM-24) = 1.0175		
Motor Burn Rate	0.370	0.370

The scale factor between 5-inch CP burn rate average and SRM burn rate is 1.0175 which is based on motor population SRM-15 to SRM-24. The resultant predicted burn rates for 360H005A and B are both 0.370 in/sec at 60 Deg F and 625 PSIA.

Listed below are the individual segment propellant weight and material summaries. Table II contains the propellant material evaluations, number of mixes from each evaluation and the propellant weight for the segment and motor. Table III show the different ingredient used, the stock number they were out of and the manufacturing vendor. Table IV summaries the propellant casting characteristics for each segment.

Table II

Propellant Evaluation and Weight Summary

	Propellant Evaluation	No. of Mixes	Propellant Weight (lb)
(Left-hand Motor, A)			
Forward	E65	45	301,149
Forward Center	E65/E66V	39/2	272,279
Aft Center	E65	41	272,401
Aft	E65	39	261,039
Igniter	F70		134
Motor Total		166	1,107,002
(Right-hand Motor, B)			
Forward	E65	45	301,239
Forward Center	E65	41	272,009
Aft Center	E65	41	271,909
Aft	E65	39	261,159
Igniter	F70		134
Motor Total		166	1,106,450

Table III

Propellant Material Evaluation Summary

Ingredient	Stock-Lot	Vendor
Propellant Material Evaluation Lot E65		
HB Polymer	7227-0069	ASRC
ECA	7225-0077	Dow Chemical
Aluminum Powder	7228-0066	Alcan
Iron Oxide	7226-0021	Charles Pfizer
Ammonium Perchlorate		
200 Micron (Unground AP)	7229-0076	Kerr McGee
20 Micron (Ground AP)	7229-0076	Kerr McGee
HB/ECA Ratio	86.6% HB	
Iron Oxide	0.332%	
Propellant Material Evaluation Lot E66 (Verification)		
HB Polymer	7227-0070	ASRC
ECA	7225-0078	Dow Chemical
Aluminum Powder	7228-0067	Alcoa
Iron Oxide	7226-0024	Charles Pfizer
Ammonium Perchlorate		
200 Micron (Unground AP)	7229-0077	Kerr McGee
20 Micron (Ground AP)	7229-0077	Kerr McGee
HB/ECA Ratio	86.8% HB	
Iron Oxide	0.283%	

Table IV

Propellant Casting Summary

	Cast Dates	Tot. Cast Time (hr)	Avg. Mix Cast Time (min)	Avg. Rise Rate (in/hr)
(Left-hand Motor, A)				
Forward	1-17-89	23.3	44	16.0
Forward Center	11-30-88	18.5	36	17.4
Aft Center	11-03-88	20.8	33	15.8
Aft	11-17-88	18.2	40	21.5
Motor Average	12-02-88	20.2	38	17.7
(Right-hand Motor, B)				
Forward	1-13-89	19.3	41	19.2
Forward Center	11-22-88	17.9	42	18.3
Aft Center	11-09-88	17.4	34	18.9
Aft	10-31-88	18.6	39	21.0
Motor Average	11-26-88	18.3	39	19.4

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